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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/716,117      | 11/18/2003  | Yasushi Inda         | 645-165             | 6100             |

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NEW YORK, NY 10036

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| EXAMINER |
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ECHELMAYER, ALIX ELIZABETH

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1745

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 03/07/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |  |                                      |  |
|------------------------------|--|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/716,117         | <b>Applicant(s)</b><br>INDA, YASUSHI |  |
|                              | <b>Examiner</b><br>Alix Elizabeth Echelmeyer | <b>Art Unit</b><br>1745              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. This Office Action is in response to the amendment filed December 5, 2006.  
Claims 1, 6 and 8 have been amended. Claim 7 has been cancelled. Claims 1-6 and 8-17 are pending and are rejected finally for the reasons given below.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 1-6 and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al. (US Patent 6,365,300) in view of Fu (US Patent 5,702,995).

Regarding claim 1, Ota et al. teach a lithium secondary battery having an inorganic solid electrolyte layer, a positive electrode, and a negative electrode (abstract; Figure 1; column 3 lines 24-28).

As for claim 2, the electrolyte layer has a thickness of 2 - 22  $\mu\text{m}$  (column 6 lines 65-67).

Regarding claim 5, Ota et al. teach that the entire electrolyte layer is comprised of an inorganic solid electrolyte (column 3 lines 32-41). Since the electrolyte layer of Ota

et al. is comprised entirely of the inorganic substance, it is 100 weight % of the inorganic substance.

As for claims 9-13, 16 and 17, Ota et al. teach that particles of an inorganic lithium-ion conducting substance with diameters of 0.1 to 0.5  $\mu\text{m}$  are used in the electrolyte. Further, the particles are formed from the mixed molten body.

Ota et al. fail to teach the use of a lithium ion conductive crystal or glass-ceramic in the solid electrolyte layer of the lithium secondary battery.

Fu teaches the use of glass-ceramics having a main crystal phase and also having high lithium-ion conductivity (abstract). Fu teaches that the use of these glass-ceramics in solid electrolytes is advantageous because it produces electrolytes that have high conductivity, are easier to handle, and are easier to form into compact designs such as a thin film than previous solid electrolytes (column 1 lines 57-59).

Regarding claim 4, Fu teaches that the ionic conductivity of the electrolyte layer is greater than  $10^{-3}\text{S/cm}$  at  $25^{\circ}\text{C}$  (column 1 lines 60-63).

Claims 3, 14, and 15 are being viewed as containing product by process limitations. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985), MPEP 2113. In this

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case, the claimed product is obvious over Ota et al. in view of Fu regardless of how it was made.

It would be desirable to use the glass-ceramics of Fu in the solid electrolyte of the battery of Ota et al. in order to make an electrolyte that is easier to handle, easier to form, and high in conductivity.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the glass-ceramic of Fu with the solid electrolyte of the battery of Ota et al. in order to make an electrolyte that is easier to handle, easier to form, and high in conductivity.

#### ***Response to Arguments***

4. Applicant's arguments filed December 5, 1006 have been fully considered but they are not persuasive.

The arguments regarding independent claim 1 are moot since the claim has been amended. The new grounds of rejection, given above, have been provided to reject the claim as amended.

Applicant argues that Fu does not teach a crystal electrolyte, but only teaches lithium ion conductive glass-ceramics. Applicant is directed to column 1 lines 57-59 of Fu, where it is disclosed that the material is for use as a lithium ion solid electrolyte. Further, Applicant is directed to the column 2 lines 12-18 of Fu, where it is taught that the glass-ceramic has a crystal phase.

Applicant argues that, since Ota et al. specifically teach away from polycrystalline electrolyte, the combination of Ota et al. and Fu is prohibited. The examiner disagrees. Ota et al. teach that a polycrystalline layer is undesirable because it would be porous (column 4 lines 15-23); however, a single crystal is not porous. If the material of Fu formed single or very large crystals, it would not be porous.

Finally, Applicant argues that there is no motivation to combine Ota et al. with Fu. The motivation, provided above, is to make an electrolyte that is easier to handle, easier to form, and high in conductivity.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

aee

  
SUSY TSANG-FOSTER  
PRIMARY EXAMINER